IN THE CLAIMS:

1. (Original) A modular power supply architecture for automatic test equipment including:

a control module having a control signal output line, the control module including

control circuitry to generate a control signal along the control signal output line and

measurement circuitry coupled to the control signal output line;

a plurality of output modules having respective control inputs coupled in parallel to the control signal output line to receive the control signal and having respective current outputs connected in parallel, the plurality of output modules operative in response to the control signal to generate respective currents at the plurality of current outputs; and

a current output bus disposed at the plurality of current outputs for summing the respective current outputs, the output bus being isolated from the control signal line.

2. (Original) A modular power supply architecture according to claim 1 wherein the control circuitry includes:

an error amplifier for detecting the difference between a desired power supply output and the actual power supply output, and operative to generate an error signal to correct for the detected difference;

a main loop amplifier circuit coupled to the output of the error amplifier;

a rectifier having inputs tied to the main loop amplifier and operative to determine whether the error signal requires source or sink current, the rectifier including source and sink circuitry to generate respective source or sink current control signals; and

driver circuitry coupled to the rectifier to condition the source or sink current control signals.

3. (Original) A modular power supply architecture according to claim 1 wherein the measurement circuitry comprises current measuring circuitry.

4. (Original) A modular power supply architecture according to claim 1 and further including:

conditioning circuitry coupled to the control signal line.

5. (Original) A modular power supply architecture according to claim 4 wherein the conditioning circuitry includes:

biasing circuitry for generating a bias current signal for the plurality of output modules; and

clamping circuitry for establishing maximum and minimum current levels.

6. (Original) A modular power supply architecture according to claim 1 wherein the plurality of output modules comprise respective transconductance amplifier circuits.

7. (Currently Amended) A modular power supply architecture according to claim ~~1~~ 6 wherein each of respective transconductance amplifier circuits includes:

respective sink and source current paths, each of the sink and source current paths including

a control amplifier having a feedback input and a control input for receiving the source or sink control signal from the control module,

an FET current source disposed at the output of the control amplifier, and

a differential amplifier having input circuitry disposed in the output path of the FET, and operative to generate a feedback signal to the control amplifier.

8. (Original) A modular power supply architecture for automatic test equipment including:

a control module having a control signal output line, the control module including

control circuitry to generate a control signal along the control signal output line and

conditioning circuitry coupled to the control signal output line;

a plurality of output modules having respective control inputs coupled in parallel to the control signal output line to receive the control signal and having respective current outputs connected in parallel, the plurality of output modules operative in response to the control signal to generate respective currents at the plurality of current outputs; and

a current output bus disposed at the plurality of current outputs for summing the respective current outputs, the output bus being isolated from the control signal line.

Cont

9. (Original) A modular power supply architecture according to claim 8 wherein the control circuitry includes:

an error amplifier for detecting the difference between a desired power supply output and the actual power supply output, and operative to generate an error signal to correct for the detected difference;

a main loop amplifier coupled to the output of the error amplifier;

a rectifier having inputs tied to the main loop amplifier and operative to determine whether the error signal requires source or sink current, the rectifier including source and sink circuitry to generate respective source or sink current control signals; and

driver circuitry coupled to the rectifier to condition the source or sink current control signals.

10. (Currently Amended) A modular power supply architecture according to claim ~~1~~ 8 and further including:

measurement circuitry coupled to the control signal line.

11. (Original) A modular power supply architecture according to claim 10 wherein the measurement circuitry comprises current measuring circuitry.

12. (Original) A modular power supply architecture according to claim 8 wherein the conditioning circuitry includes:

biasing circuitry for generating a bias current signal; and

clamping circuitry for establishing maximum and minimum current levels.

13. (Original) A modular power supply architecture according to claim 8 wherein the plurality of output modules comprise respective transconductance amplifier circuits.

14. (Currently Amended) A modular power supply architecture according to claim ~~8~~ 13 wherein each of respective transconductance amplifier circuits includes:

respective sink and source current paths, each of the sink and source current paths including

a control amplifier having a feedback input and a control input for receiving the source or sink control signal from the control module,

an FET current source disposed at the output of the control amplifier, and

a differential amplifier having input circuitry disposed in the output path of the FET, and operative to generate a feedback signal to the control amplifier.

15. (Original) A method of supplying power to a device-under-test, the method including the steps of:

selecting a control module comprising control circuitry for generating respective sink and source control signals along respective source and sink control lines;

paralleling a plurality of output current modules to receive the sink and source control signals from the respective source and sink control lines;

summing the output currents from the output current modules to an output current bus; and

isolating the output current bus from the control circuitry.